

REMARKS

Reconsideration of the application is requested in view of the above amendments and the following remarks. Claim 1 has been amended and claims 1-5 remain pending in the application. Support for the amendments to claim 1 can be found at page 4, lines 14-18 and lines 23-25 as well as in Figure 1 of the present application.

Claims 1-3 were rejected under 35 U.S.C. § 102(e) as being anticipated by Ko (US 6,097,142). Applicant respectfully traverse this rejection.

By way of background with reference to Figure 6 in the present specification, when a shadow mask is stretched in the Y direction (in a direction in which lines of the apertures are directed), a local doming phenomenon occurs in which the aperture 13 is shifted in the horizontal direction (in a direction indicated by the arrow A, that is a direction perpendicular to the direction in which the tension is applied) due to the thermal expansion of the shadow mask 6. When the local doming phenomenon occurs, electron beams do not hit the shadow mask correctly, thus causing displacement of colors, unevenness in colors, and deterioration of luminance, as well as creating wrinkles in the shadow mask.

Claim 1 requires "a dead space formed on both outer sides of said effective area in a direction perpendicular to a direction in which the aperture lines are directed"; "the shadow mask is fixed to the support at both ends of the shadow mask in a direction in which the tension force is applied, and has unfixed open ends that are ends thereof in a direction perpendicular to the direction in which the tension force is applied"; and "a slit extending along said aperture line is formed in said dead space formed on both outer sides of said effective area in a direction perpendicular to the direction in which the aperture lines are directed".

A shadow mask having this configuration includes slits formed at both ends of the shadow mask in the direction perpendicular to the direction in which the tension force is applied to the shadow mask, that is, at the right and left open end sides thereof. Such a configuration solves the problems of the displacement of colors and the creation of wrinkles due to the shift of apertures that is caused when the heat generated by irradiation with electron beams is conducted in the horizontal direction (the direction perpendicular to the direction in which the tension

forces applies). Still further, such a configuration provides a shadow mask stretched with a tension force that is applied in the vertical direction (the direction in which the aperture lines are directed), such that the slits provided in the dead space on the open end sides absorb the thermal expansion, which prevents the shift of the apertures in the horizontal direction due to the thermal expansion. Thus, the shift of apertures in the direction perpendicular to the direction in which the tension force is applied prevents the bridges from being torn and prevents the shadow mask from being wrinkled.

Ko discloses a shadow mask in which apertures are formed in an ineffective face area 102 on both outer sides in a horizontal direction. However, because "the region outside the effective face area is formed to operate stably with larger values when tension is applied to the mask, regardless of the characteristic of the screen" (see column 4, lines 21-25 of Ko), the ineffective face area 102 is not a region that influences the characteristics of the screen. Therefore, the ineffective area 102 is not equivalent to the "dead space" of claim 1 in which a slit is formed. Moreover, the ineffective face area 102 is "formed outside a frame fixing border in all directions except for corners of the mask" (see column 3, lines 55-56 of Ko). In other words, the ineffective face area 102 is formed outside the frame, and does not exist when a cathode ray tube is completed. Therefore, the ineffective face area 102 (which does not exist when a cathode ray tube is completed) is not equivalent to the dead space of claim 1 in which a slit is formed.

Further to the above, Ko discloses a shadow mask that is fixed to the frame on all four sides (see column 3, lines 55-56 of Ko), whereas claim 1 required a shadow mask fixed on two sides and unfixed on two open ends as follows: "the shadow mask is fixed to the support at both ends of the shadow mask in a direction in which the tension force is applied, and has unfixed open ends that are ends thereof in a direction perpendicular to the direction in which the tension force is applied."

With the configuration of Ko, when electron beams are projected, both the thermal expansion of the hollow mask and the thermal expansion of the frame influence performance of the device. Therefore, an effect that the slits absorb the thermal expansion and prevent the apertures from being shifted in the horizontal direction (an advantage of the cathode ray tube configuration of claim 1 described above) cannot be achieved. Ko is clearly directed to using

apertures 101' formed in ineffective face area 101 provided inside the frame as a means of dealing with the concentration of strain at the time of stretching (see column 4, lines 61-64 of Ko), rather than absorbing thermal expansion and preventing the apertures from being shifted in the horizontal direction, as is the focus of the present application.

Therefore, Applicants submit that Ko fails to disclose every limitation of claim 1 and the claims that depend from it.

Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ko in view of Aibara (US 6,175, 185). Applicants respectfully traverse this rejection. As discussed above, Ko fails to disclose every limitation of claim 1. Aibara fails to remedy the deficiencies of Ko as it relates to claim 1. Therefore, claim 4 is allowable for at least the reason it is dependent upon an allowable base claim. Applicants do not otherwise concede the correctness of this rejection.

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ko in view of Barbin (US 3,766,419). Applicants respectfully traverse this rejection. As discussed above, Ko fails to disclose every limitation of claim 1. Barbin fails to remedy the deficiencies of Ko as it relates to claim 1. Therefore, claim 5 is allowable for at least the reason it is dependent upon an allowable base claim. Applicants do not otherwise concede the correctness of this rejection.

Applicants courteously request the Examiner's signature on Applicants' form 1449 for the Ko reference (US 6,097,142).

In view of the above, Applicants request reconsideration of the application in the form a Notice of Allowance.

Respectfully submitted,

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